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REAL PROPERTY

Infrastructure Investment Presents Opportunities to Address Long-standing Real Property Backlogs and Reduce Energy Consumption

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GAO

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Mr. Chairman and Members of the Committee:

We welcome the opportunity to testify on infrastructure investment in federal buildings, including energy-saving opportunities in federal building construction and repair and alteration projects. Federal agencies have identified billions of dollars in reinvestment requirements to maintain their aging facilities and bring them up to current standards. In addition, according to Department of Energy (DOE) estimates, federal agencies will need over a billion dollars annually through 2015 for projects needed to meet congressional energy efficiency goals. As the nation's single largest energy consumer, the federal government spent approximately \$17 billion in fiscal year 2007 on energy use in buildings and vehicles. This total represents almost 1 percent of all federal expenditures for 2007, and these costs have risen in recent years. Our testimony today discusses the potential benefits that may accrue from infrastructure investment, including energy reductions within federal buildings, and principles that could help guide infrastructure investment. Our comments are based on our body of work on repair and maintenance and energy management issues associated with federal real property. A list of our related products appears at the end of our statement.

Infrastructure Investment Presents Opportunities to Address Long-standing Backlogs in Real Property and Reduce Energy Consumption

In January 2003, GAO designated federal real property as a high-risk area, in part because of deteriorating facilities and unreliable real property data. In 2007, we reported that major real-property-holding agencies, including the General Services Administration (GSA), and the administration had made progress toward managing their real property but underlying problems, such as backlogs in repair and maintenance, still existed. GSA, which serves as the landlord for most of the federal civilian government, held real property assets valued at about \$36.4 billion in fiscal year 2007.¹ A good portion of these assets are more than 30 years old. GSA has also reported about \$7 billion in capital reinvestment requirements over the next 10 years to address deficiencies it has identified in its federal buildings. Many of these deficiencies may be associated with older buildings that have antiquated heating and air-conditioning systems and electrical systems that need to be replaced with new, more efficient systems. In October 2008, we reported that the six agencies we reviewed

¹Federal agencies, including the Department of Defense, reported holding real property assets valued at about \$1.5 trillion and spending over \$47 billion in fiscal year 2007 to maintain and operate these assets.

generally expected their backlogs to increase as the federal portfolio of real property continues to age and construction costs increase.²

The Chairman of the House Committee on Transportation and Infrastructure has recently proposed \$10 billion for investment in federal buildings.³ This investment could provide an opportunity to address some of the long-standing problems associated with the federal government's aging real estate portfolio and to protect the government's long-term investment. Addressing these needs sooner rather than later can be cost-effective because, as we have reported, postponing repairs and maintenance generally leads to higher operating and maintenance costs. These higher costs are generally attributable to inefficiencies in the older equipment as well as the more rapid deterioration of buildings and equipment that have already begun to fail. Undertaking repair and maintenance projects should reduce overall operations and maintenance costs in the future.

Infrastructure investment could also reduce energy costs and address important energy and water conservation measures as well as other measures outlined within the Energy Independence and Security Act of 2007 (EISA).⁴ Among other things, EISA seeks to increase energy efficiency and the availability of renewable energy in federal buildings. According to GSA, about half of the agency's infrastructure needs involve the consumption and conservation of energy or water. Addressing these infrastructure needs could decrease energy consumption and costs and reduce operations and maintenance expenses. Furthermore, decreasing energy consumption in federal buildings may also lower their greenhouse gas emissions. Fuel types vary in the amount of greenhouse gases their combustion emits. For example, coal and oil emit greater quantities of greenhouse gases when they are burned than do other fossil fuels, such as natural gas. As figure 1 shows, about half (48 percent) of the energy consumed in federal buildings in fiscal year 2007 was electricity, and about half of the nation's electricity is generated from coal (49 percent), according to 2007 national data from DOE's Energy Information Administration. Thus, if the federal government reduced the amount of

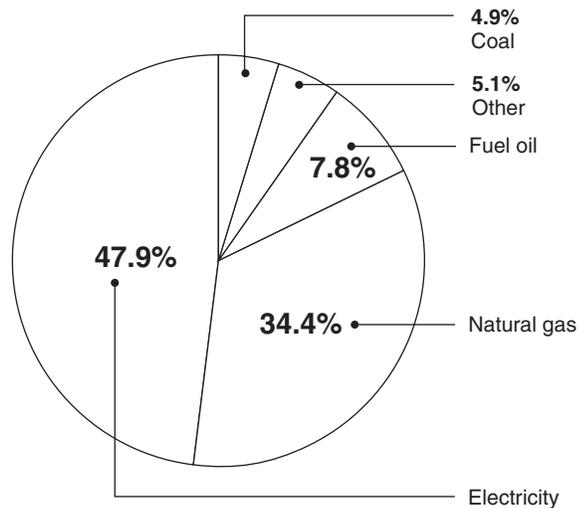
²GAO, *Federal Real Property: Government's Fiscal Exposure from Repair and Maintenance Backlogs Is Unclear*, GAO-09-10 (Washington, D.C.: Oct. 16, 2008).

³According to the Chairman's proposal, GSA would receive \$9.7 billion (\$6 billion for repairs and alterations and \$3.7 billion for new construction), the Smithsonian Institution would receive \$270 million, and the Architect of the Capitol would receive \$20 million.

⁴Pub. L. No 110-140, 121 Stat. 1492 (2007).

energy it consumed in its buildings, the government could decrease its greenhouse gas emissions.

Figure 1: Energy Consumed in Federal Buildings by Energy Type, Fiscal Year 2007



Source: DOE draft data.

Note: Numbers may not total 100 percent because of rounding.

According to GSA officials, in keeping with EISA, GSA has begun to establish a program for accelerating the use of more cost-effective technologies and practices at GSA facilities. GSA officials said that such technologies and practices could reduce energy consumption within their facilities. In the spring of 2008, GSA reviewed the use of cost-effective lighting technologies in its facilities. GSA also indicated that it would evaluate the use of geothermal heat pumps in its buildings on a case-by-case basis as it undertakes major renovations of federal facilities.⁵ Furthermore, GSA officials told us, GSA is using other cost-effective practices in its facilities, such as reducing the need for artificial light by maximizing the use of natural light, better insulating buildings, and installing green (planted) roofs, which can absorb carbon dioxide and reduce stormwater runoff while also insulating facilities. According to GSA officials, the principal barrier to improving the energy performance of

⁵Geothermal heat pumps can be used to heat, cool and, if so equipped, supply a facility with hot water by using the constant temperature of the earth as the exchange medium instead of the outside air temperature. Relative to air-source heat pumps, geothermal heat pumps are highly efficient, last longer, need little maintenance, and do not depend on the temperature of the outside air.

its existing buildings is the limited availability of capital for addressing a backlog of repairs and alterations that would improve energy or water conservation. GSA has been seeking to address this issue, in part, through an expanded, deliberate program to increase the use of alternative financing mechanisms—such as contracts with private companies that initially pay for energy improvements and then receive compensation from the agencies over time from the monetary savings realized from these projects—to meet energy goals. However, as our past work has shown, agencies entering into these contracts have not always been able to verify whether energy savings were greater than project costs. Furthermore, lack of expertise in energy management and high staff turnover may create challenges for negotiating and overseeing alternative financing mechanisms. Paying for energy efficiency improvements with up-front funding is generally the most cost-effective means of acquiring them and allows the federal government to reap the full benefits of the resulting savings.

GAO's Guiding Principles Can Provide a Framework for Infrastructure Investment Decisions

An infusion of funding provides opportunities but also brings the challenge of ensuring the funds are spent effectively and efficiently on projects that can offer the greatest benefits. In May 2008, we identified a number of principles that could help guide a reexamination of federal infrastructure programs. Three of these principles may be particularly helpful in guiding federal infrastructure investments:

- Create well-defined goals based on identified areas of national interest.
- Incorporate performance and accountability into funding decisions.
- Employ the best tools and approaches to emphasize return on investment.

While these principles can apply to any investment projects, applying them to energy efficiency projects, which can often provide long-term reductions in energy costs and environmental benefits, may help agencies better address the challenges they face in meeting their energy goals. We have identified these challenges in our previous work. As federal agencies move forward with infrastructure investment projects, having well-defined goals and plans can help agencies define what they seek to accomplish, identify the strategies they will use to achieve results, and determine how well they will succeed in achieving planned results and objectives. Updating these goals and plans will also be important to reflect changing circumstances. Furthermore, the plans should contain a number of key

elements, including approaches or strategies for achieving goals and provisions for obtaining reliable performance data needed to set goals, evaluate results, and improve performance. Measurement of results is a key element of accountability. Specifically related to energy, agencies have faced historical challenges with collecting and reporting reliable data, in part because of limited metering in federal buildings. Reliable data are critical for agencies to assess their progress toward their goals and identify opportunities for improvement. Implementing the advanced metering requirement⁶ in the Energy Policy Act of 2005⁷ may give agencies an important tool both to verify the return on investment of building repairs and modernization and to identify additional opportunities for energy and cost savings. Finally, employing the best tools and approaches can increase return on investment. While alternative financing mechanisms have allowed the federal government both to implement energy-saving projects and to use up-front funding for other priorities, the proposed infrastructure investment could provide up-front funding for energy projects too, thereby allowing them to be implemented more cost-effectively.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or Members of the Committee may have at this time.

Contacts and Acknowledgments

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⁶Advanced meters are capable of providing real-time data that feed directly into an agency's metering database, verifying savings from energy projects, and helping officials to identify potential energy-saving opportunities.

⁷Pub. L. No. 109-58, § 103, 119 Stat. 594, 608—609 (2005) (codified at 42 U.S.C. § 8253(e)(1)).

Related GAO Products

Status of GSA's Implementation of Selected Green Building Provisions of the Energy Independence and Security Act of 2007. [GAO-09-111R](#). Washington, D.C.: October 31, 2008.

Federal Real Property: Government's Fiscal Exposure from Repair and Maintenance Backlogs Is Unclear. [GAO-09-10](#). Washington, D.C.: October 16, 2008.

Green Affordable Housing: HUD Has Made Progress in Promoting Green Building, but Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants. [GAO-09-46](#). Washington, D.C.: October 7, 2008.

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